

Analytical Laboratory

13339 Hagers Ferry Road Huntersville, NC 28078-7929 McGuire Nuclear Complex - MG03A2 Phone: 980-875-5245 Fax: 980-875-4349

Order Summary Report

Order Number:	J12110206			
Project Name:	Flex Fuel WW			
Customer Name(s):	Bill Kennedy, Melonie Mart	n, Wayne Chapman, Tom Johnso	on	
Customer Address:	3195 Pine Hall Rd			
	Mailcode: Belews Steam S	tation		
	Belews Creek, NC 28012			
Lab Contact:	Jason C Perkins	Phone: 980-875-53	348	
Report Authorized By: (Signature)		Date:	11/30/2012	

Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted. Subcontracted data included on the Duke Certificate of Analysis is to be used as information only. Certified vendor results can be found in the subcontracted lab final report. Duke Energy Analytical Laboratory subcontracts analyses to other vendor laboratories that have been qualified by Duke Energy to perform these analyses except where noted.

Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)

Certification:

The Analytical Laboratory holds the following State Certifications: North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

Sample ID's & Descriptions:

Page 2 of 29

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2012024315	BELEWS	09-Nov-12 8:00 AM	TRAVIS THORNTON	FGD Purge Eff
2012024316	BELEWS	09-Nov-12 8:05 AM	TRAVIS THORNTON	EQ TANK
2012024317	BELEWS	09-Nov-12 8:10 AM	TRAVIS THORNTON	BIOREACTOR 1 INF
2012024318	BELEWS	09-Nov-12 8:10 AM	TRAVIS THORNTON	biOREACTOR 1 INF HG BLK
2012024319	BELEWS	09-Nov-12 8:15 AM	TRAVIS THORNTON	BIOREACTOR 2 INF.
2012024320	BELEWS	09-Nov-12 8:15 AM	TRAVIS THORNTON	BIOREACTOR 2 INF. HG BLANK
2012024321	BELEWS	09-Nov-12 8:20 AM	TRAVIS THORNTON	BIOREACTOR 2 EFF.
2012024322	BELEWS	09-Nov-12 8:20 AM	TRAVIS THORNTON	BIOREACTOR 2 EFF. HG BLANK
2012024323	BELEWS	09-Nov-12 8:30 AM	TRAVIS THORNTON	FILTER BLANK

Technical Validation Review

Checklist:

COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures).

All Results are less than the laboratory reporting limits. □ Yes ☑ No

All laboratory QA/QC requirements are acceptable. ☑ Yes □ No

Report Sections Included:

Reviewed By:

DBA Account

✓ Sub-contracted Laboratory Results
☐ Customer Specific Data Sheets, Reports, & Documentation
☐ Customer Database Entries
✓ Chain of Custody
✓ Electronic Data Deliverable (EDD) Sent Separately

Date:

11/30/2012

This report shall not be reproduced, except in full.

Order # J12110206

Site: FGD Purge Eff Sample #: 2012024315

Collection Date: 09-Nov-12 8:00 AM Matrix: OTHER

	0.0071111					Watth.	THEIX	
Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC								
Bromide	100	mg/L		5	50	EPA 300.0	11/20/2012 01:03	JAHERMA
Chloride	7100	mg/L		100	1000	EPA 300.0	11/20/2012 01:03	JAHERMA
Sulfate	1400	mg/L		100	1000	EPA 300.0	11/20/2012 01:03	JAHERMA
MERCURY (COLD VAPOR) IN W	/ATER							
Mercury (Hg)	160	ug/L		5	100	EPA 245.1	11/15/2012 14:18	AGIBBS
DISSOLVED METALS BY ICP								
Manganese (Mn)	7.87	mg/L		0.05	10	EPA 200.7	11/27/2012 13:09	MHH7131
TOTAL RECOVERABLE METAL	S BY ICP							
Boron (B)	184	mg/L		0.5	10	EPA 200.7	11/14/2012 13:20	DJSULL1
Calcium (Ca)	4020	mg/L		0.1	10	EPA 200.7	11/14/2012 13:20	DJSULL1
Iron (Fe)	128	mg/L		0.1	10	EPA 200.7	11/14/2012 13:20	DJSULL1
Magnesium (Mg)	818	mg/L		0.05	10	EPA 200.7	11/14/2012 13:20	DJSULL1
Manganese (Mn)	8.42	mg/L		0.05	10	EPA 200.7	11/14/2012 13:20	DJSULL1
DISSOLVED METALS BY ICP-M	<u>IS</u>							
Selenium (Se)	343	ug/L		10	10	EPA 200.8	11/14/2012 15:36	KRICHAR
TOTAL RECOVERABLE METAL	S BY ICP-MS							
Arsenic (As)	209	ug/L		10	10	EPA 200.8	11/15/2012 12:11	KRICHAR
Cadmium (Cd)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:11	KRICHAR
Chromium (Cr)	239	ug/L		10	10	EPA 200.8	11/15/2012 12:11	KRICHAR
Copper (Cu)	124	ug/L		10	10	EPA 200.8	11/15/2012 12:11	KRICHAR
Nickel (Ni)	301	ug/L		10	10	EPA 200.8	11/15/2012 12:11	KRICHAR
Selenium (Se)	5470	ug/L		20	20	EPA 200.8	11/15/2012 12:11	KRICHAR
Silver (Ag)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:11	KRICHAR
Zinc (Zn)	389	ug/L		10	10	EPA 200.8	11/15/2012 12:11	KRICHAR
SELENIUM SPECIATION - (Anal	ysis Performed I	by Applied	Speciation a	nd Cons	ulting, LLC	<u>)</u>		
Vendor Parameter	Complete					Vendor Method		V_AS&C
TOTAL DISSOLVED SOLIDS								
TDS	18000	mg/L		200	1	SM2540C	11/14/2012 16:23	SWILLI3
TOTAL SUSPENDED SOLIDS								
TSS	3700	mg/L		250	1	SM2540D	11/19/2012 10:27	SWILLI3

This report shall not be reproduced, except in full.

Order # J12110206

Site: EQ TANK Sample #: 2012024316

Collection Date: 09-Nov-12 8:05 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY (COLD VAPOR)	IN WATER							
Mercury (Hg)	101	ug/L		2.5	50	EPA 245.1	11/15/2012 14:21	AGIBBS
DISSOLVED METALS BY IC	<u>CP</u>							
Manganese (Mn)	6.49	mg/L		0.05	10	EPA 200.7	11/27/2012 13:13	MHH7131
TOTAL RECOVERABLE ME	ETALS BY ICP							
Boron (B)	170	mg/L		0.5	10	EPA 200.7	11/14/2012 13:24	DJSULL1
Calcium (Ca)	4110	mg/L		0.1	10	EPA 200.7	11/14/2012 13:24	DJSULL1
Iron (Fe)	92.9	mg/L		0.1	10	EPA 200.7	11/14/2012 13:24	DJSULL1
Magnesium (Mg)	742	mg/L		0.05	10	EPA 200.7	11/14/2012 13:24	DJSULL1
Manganese (Mn)	6.86	mg/L		0.05	10	EPA 200.7	11/14/2012 13:24	DJSULL1
DISSOLVED METALS BY IC	CP-MS							
Selenium (Se)	284	ug/L		10	10	EPA 200.8	11/14/2012 15:39	KRICHAR
TOTAL RECOVERABLE ME	ETALS BY ICP-MS							
Arsenic (As)	170	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR
Cadmium (Cd)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR
Chromium (Cr)	189	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR
Copper (Cu)	95.9	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR
Nickel (Ni)	266	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR
Selenium (Se)	3770	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR
Silver (Ag)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR
Zinc (Zn)	328	ug/L		10	10	EPA 200.8	11/15/2012 11:58	KRICHAR

Site: BIOREACTOR 1 INF Sample #: 2012024317

Collection Date: 09-Nov-12 8:10 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst				
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)												
Vendor Parameter	Complete					Vendor Method		V_BRAND				
DISSOLVED METALS BY ICP												
Manganese (Mn)	1.20	mg/L		0.05	10	EPA 200.7	11/27/2012 13:17	MHH7131				
TOTAL RECOVERABLE METALS I	BY ICP											
Boron (B)	148	mg/L		0.5	10	EPA 200.7	11/14/2012 13:27	DJSULL1				
Calcium (Ca)	2970	mg/L		0.1	10	EPA 200.7	11/14/2012 13:27	DJSULL1				
Iron (Fe)	< 0.1	mg/L		0.1	10	EPA 200.7	11/14/2012 13:27	DJSULL1				
Magnesium (Mg)	628	mg/L		0.05	10	EPA 200.7	11/14/2012 13:27	DJSULL1				
Manganese (Mn)	1.16	mg/L		0.05	10	EPA 200.7	11/14/2012 13:27	DJSULL1				

This report shall not be reproduced, except in full.

Order # J12110206

Site: BIOREACTOR 1	INF					Sample #:	2012024317	
Collection Date: 09-Nov	-12 8:10 AM					Matrix:	OTHER	
Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
DISSOLVED METALS BY IC	P-MS							
Selenium (Se)	104	ug/L		10	10	EPA 200.8	11/14/2012 15:42	KRICHAR
TOTAL RECOVERABLE ME	TALS BY ICP-MS							
Arsenic (As)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
Cadmium (Cd)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
Chromium (Cr)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
Copper (Cu)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
Nickel (Ni)	23.0	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
Selenium (Se)	111	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
Silver (Ag)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
Zinc (Zn)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:01	KRICHAR
SELENIUM SPECIATION - (A	Analysis Performed b	y Applied	Speciation a	nd Cons	ulting, LL	<u>.C)</u>		
Vendor Parameter	Complete					Vendor Metho	od	V_AS&C
Site: biOREACTOR 1	INF HG BLK					Sample #:	2012024318	
Collection Date: 09-Nov-	-12 8:10 AM					Matrix:	OTHER	
Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
MERCURY 1631 - (Analysis	Performed by Brooks	s Rand La	bs LLC)					
Vendor Parameter	Complete					Vendor Metho	od	V_BRAND
Site: BIOREACTOR 2	2 INF.					Sample #:	2012024319	
Collection Date: 09-Nov-	-12 8:15 AM					Matrix:	OTHER	

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst				
MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)												
Vendor Parameter	Complete					Vendor Method		V_BRAND				
DISSOLVED METALS BY ICP												
Manganese (Mn)	0.782	mg/L		0.05	10	EPA 200.7	11/27/2012 13:21	MHH7131				
TOTAL RECOVERABLE METALS E	BY ICP											
Boron (B)	138	mg/L		0.5	10	EPA 200.7	11/14/2012 13:31	DJSULL1				
Calcium (Ca)	2900	mg/L		0.1	10	EPA 200.7	11/14/2012 13:31	DJSULL1				
Iron (Fe)	0.111	mg/L		0.1	10	EPA 200.7	11/14/2012 13:31	DJSULL1				
Magnesium (Mg)	612	mg/L		0.05	10	EPA 200.7	11/14/2012 13:31	DJSULL1				
Manganese (Mn)	0.750	mg/L		0.05	10	EPA 200.7	11/14/2012 13:31	DJSULL1				

This report shall not be reproduced, except in full.

Order # J12110206

Site: BIOREACTOR 2 INF. Sample #: 2012024319

Collection Date: 09-Nov-12 8:15 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst		
DISSOLVED METALS BY ICP-MS										
Selenium (Se)	31.3	ug/L		10	10	EPA 200.8	11/14/2012 15:46	KRICHAR		
TOTAL RECOVERABLE METALS BY ICP-MS										
Arsenic (As)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		
Cadmium (Cd)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		
Chromium (Cr)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		
Copper (Cu)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		
Nickel (Ni)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		
Selenium (Se)	22.7	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		
Silver (Ag)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		
Zinc (Zn)	< 10	ug/L		10	10	EPA 200.8	11/15/2012 12:04	KRICHAR		

SELENIUM SPECIATION - (Analysis Performed by Applied Speciation and Consulting, LLC)

Vendor Parameter Complete Vendor Method V_AS&C

Site: BIOREACTOR 2 INF. HG BLANK Sample #: 2012024320

Collection Date: 09-Nov-12 8:15 AM Matrix: OTHER

Analyte Result Units Qualifiers RDL DF Method Analysis Date/Time Analyst

MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)

Vendor Parameter Complete Vendor Method V_BRAND

Site: BIOREACTOR 2 EFF. Sample #: 2012024321

Collection Date: 09-Nov-12 8:20 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC								
Bromide	80	mg/L		5	50	EPA 300.0	11/20/2012 01:22	JAHERMA
Chloride	5800	mg/L		100	1000	EPA 300.0	11/20/2012 01:22	JAHERMA
Sulfate	1600	mg/L		100	1000	EPA 300.0	11/20/2012 01:22	JAHERMA
MERCURY 1631 - (Analysis Perfor	med by Brooks	Rand La	bs LLC)					
Vendor Parameter	Complete					Vendor Method		V_BRAND
DISSOLVED METALS BY ICP								
Manganese (Mn)	0.859	mg/L		0.05	10	EPA 200.7	11/27/2012 13:25	MHH7131

This report shall not be reproduced, except in full.

Order # J12110206

Site: BIOREACTOR 2 EFF. Sample #: 2012024321

					Matrix:	OTHER		
Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE META	ALS BY ICP							
Boron (B)	130	mg/L		0.5	10	EPA 200.7	11/14/2012 13:35	DJSULL1
Calcium (Ca)	2760	mg/L		0.1	10	EPA 200.7	11/14/2012 13:35	DJSULL1
Iron (Fe)	< 0.1	mg/L		0.1	10	EPA 200.7	11/14/2012 13:35	DJSULL1
Magnesium (Mg)	557	mg/L		0.05	10	EPA 200.7	11/14/2012 13:35	DJSULL1
Manganese (Mn)	0.825	mg/L		0.05	10	EPA 200.7	11/14/2012 13:35	DJSULL1
DISSOLVED METALS BY ICP	<u>-MS</u>							
Selenium (Se)	9.90	ug/L		5	5	EPA 200.8	11/14/2012 15:49	KRICHAR
TOTAL RECOVERABLE META	ALS BY ICP-MS							
Arsenic (As)	< 5	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
Cadmium (Cd)	< 5	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
Chromium (Cr)	< 5	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
Copper (Cu)	< 5	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
Nickel (Ni)	< 5	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
Selenium (Se)	5.30	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
Silver (Ag)	< 5	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
Zinc (Zn)	< 5	ug/L		5	5	EPA 200.8	11/15/2012 12:08	KRICHAR
SELENIUM SPECIATION - (Ar	nalysis Performed I	oy Applied	Speciation a	nd Consu	ılting, LL	<u>.C)</u>		
Vendor Parameter	Complete					Vendor Metho	od	V_AS&C
Site: BIOREACTOR 2 I	EFF. HG BLANK	(Sample #:	2012024322	
Collection Date: 09-Nov-1	2 8:20 AM					Matrix:	OTHER	

Analyte Result Units Qualifiers RDL DF Method Analysis Date/Time Analyst

MERCURY 1631 - (Analysis Performed by Brooks Rand Labs LLC)

Vendor Parameter Complete Vendor Method V_BRAND

Site: FILTER BLANK Sample #: 2012024323

Collection Date: 09-Nov-12 8:30 AM Matrix: OTHER

Analyte	Result	Units Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
DISSOLVED METALS BY ICP							
Manganese (Mn)	0.021	mg/L	0.005	1	EPA 200.7	11/27/2012 12:41	MHH7131
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	1.63	ug/L	1	1	EPA 200.8	11/14/2012 14:23	KRICHAR



November 28, 2012

Duke Energy
ATTN: Jay Perkins
Scientific Support-Laboratory
13339 Hagers Ferry Road
Huntersville NC 28078
jcperkins@duke-energy.com
labcustomer@duke-energy.com

RE: Project DUK-HV1201 Client Project: J12110206

Dear Mr. Perkins,

On November 13, 2012, Brooks Rand Labs (BRL) received three (3) wastewater samples and three (3) corresponding field blanks. An aliquot was removed from each sample bottle and filtered into a separate container designed for dissolved mercury (Hg) analysis. The sample volume from the original container was logged-in for total Hg analysis. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

Data used for regulatory purposes has a 24 hour filtration holding time requirement. Non-regulatory purposed data has a 48 hour filtration holding time. The samples were received outside of the non-regulatory requirement holding time and were qualified **H**.

The results were blank-corrected as described in the calculations section of the relevant SOP and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. Aside from concentration qualifiers, all data was reported without further qualification

BRL, an accredited laboratory, certifies the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more details, see the *Report Information* page of the report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Tiffany Stilwater Project Manager

tiffany@brooksrand.com

tilwate

Mi Sun Um Data Manager

misun@brooksrand.com



Page 10 of 29 Client PM: Jay Perkins Client PO: 141391

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at http://www.brooksrand.com/default.asp?contentID=586. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	MS	matrix spike
BRL	Brooks Rand Labs	MSD	matrix spike duplicate
BS	laboratory fortified blank	ND	non-detect
CAL	calibration standard	NR	non-reportable
CCV	continuing calibration verification	PS	post preparation spike
COC	chain of custody record	REC	percent recovery
CRM	certified reference material	RPD	relative percent difference
D	dissolved fraction	RSD	relative standard deviation
DUP	duplicate	SCV	secondary calibration verification
ICV	initial calibration verification	SOP	standard operating procedure
MDL	method detection limit	SRM	standard reference material
MRL	method reporting limit	Т	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

- B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
- **E** An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
- **H** Holding time and/or preservation requirements not met. Result is estimated.
- J Estimated value. A full explanation is presented in the narrative.
- **J-M** Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
- J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
- M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
- N Spike recovery was not within acceptance criteria. Result is estimated.
- **R** Rejected, unusable value. A full explanation is presented in the narrative.
- U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
- X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA <u>SOW ILM03.0</u>, Exhibit B, Section III, pg. B-18, and the <u>USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.</u>



Page 11 of 29 Client PM: Jay Perkins Client PO: 141391

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
BioReactor 1 Inf	1246007-01	Influent	Sample	11/09/2012	11/13/2012
BioReactor 1 Inf	1246007-02	Influent	Sample	11/09/2012	11/13/2012
BioReactor 1 Inf Hg Blk	1246007-03	DIW	Field Blank	11/09/2012	11/13/2012
BioReactor 1 Inf Hg Blk	1246007-04	DIW	Field Blank	11/09/2012	11/13/2012
BioReactor 2 Inf	1246007-05	Influent	Sample	11/09/2012	11/13/2012
BioReactor 2 Inf	1246007-06	Influent	Sample	11/09/2012	11/13/2012
BioReactor 2 Inf Hg Blk	1246007-07	DIW	Field Blank	11/09/2012	11/13/2012
BioReactor 2 Inf Hg Blk	1246007-08	DIW	Field Blank	11/09/2012	11/13/2012
BioReactor 2 Eff	1246007-09	Effluent	Sample	11/09/2012	11/13/2012
BioReactor 2 Eff	1246007-10	Effluent	Sample	11/09/2012	11/13/2012
BioReactor 2 Eff Hg Blk	1246007-11	DIW	Field Blank	11/09/2012	11/13/2012
BioReactor 2 Eff Hg Blk	1246007-12	DIW	Field Blank	11/09/2012	11/13/2012

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	Water	EPA 1631	11/16/2012	11/20/2012	B122153	1200879
Hg	Water	EPA 1631	11/16/2012	11/21/2012	B122153	1200883



Page 12 of 29 Client PM: Jay Perkins Client PO: 141391

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
BioReactor 1 I	nf									
1246007-01	Hg	Influent	Т	107		3.79	10.1	ng/L	B122153	1200879
1246007-02	Hg	Influent	D	3.91	Н	0.15	0.39	ng/L	B122153	1200883
BioReactor 1 I	nf Hg Blk									
1246007-03	Hg	DIW	Т	0.15	U	0.15	0.40	ng/L	B122153	1200879
1246007-04	Hg	DIW	D	0.15	H, U	0.15	0.40	ng/L	B122153	1200879
BioReactor 2 E	Eff									
1246007-09	Hg	Effluent	T	6.93		0.15	0.39	ng/L	B122153	1200879
1246007-10	Hg	Effluent	D	1.37	Н	0.15	0.39	ng/L	B122153	1200879
BioReactor 2 E	eff Hg Blk									
1246007-11	Hg	DIW	T	0.15	U	0.15	0.40	ng/L	B122153	1200879
1246007-12	Hg	DIW	D	0.15	H, U	0.15	0.40	ng/L	B122153	1200879
BioReactor 2 I	nf									
1246007-05	Hg	Influent	Т	65.2		0.38	1.01	ng/L	B122153	1200879
1246007-06	Hg	Influent	D	2.59	Н	0.16	0.42	ng/L	B122153	1200879
BioReactor 2 I	nf Hg Blk									
1246007-07	Hg	DIW	Т	0.15	U	0.15	0.41	ng/L	B122153	1200879
1246007-08	Hg	DIW	D	0.15	H, U	0.15	0.40	ng/L	B122153	1200879



Page 13 of 29 Client PM: Jay Perkins Client PO: 141391

Accuracy & Precision Summary

Batch: B122153 Lab Matrix: Water Method: EPA 1631

Sample B122153-SRM1	Analyte Certified Reference Materia Hg	Native al (1245026	Spike , NIST 1641d 15.68	Result 1000x diluti 15.03	Units (on) ng/L	REC & Limits 96% 85-115	RPD & Limits
B122153-MS1	Matrix Spike (1246007-01) Hg	106.9	505.1	651.2	ng/L	108% 71-125	
B122153-MSD1	Matrix Spike Duplicate (124 Hg	16007-01) 106.9	505.1	637.3	ng/L	105% 71-125	2% 24
B122153-MS2	Matrix Spike (1246031-03) Hg	215.9	646.5	882.8	ng/L	103% 71-125	
B122153-MSD2	Matrix Spike Duplicate (124 Hg	16031-03) 215.9	646.5	882.4	ng/L	103% 71-125	0.05% 24



Page 14 of 29 Client PM: Jay Perkins Client PO: 141391

Method Blanks & Reporting Limits

Batch: B122153 Matrix: Water Method: EPA 1631

Analyte: Hg

Sample	Result	Units
B122153-BLK1	0.19	ng/L
B122153-BLK2	0.19	ng/L
B122153-BLK3	0.15	ng/L
B122153-BLK4	0.14	ng/L

 Average: 0.17
 Standard Deviation: 0.03
 MDL: 0.15

 Limit: 0.50
 Limit: 0.10
 MRL: 0.39



Page 15 of 29 Client PM: Jay Perkins **Client PO: 141391**

Instrument Calibration

Sequence: 1200879 **Total Mercury and Mercury Speciation by CVAFS** Instrument: THG-05

Method: EPA 1631

Date: 11/20/2012 Analyte: Hg

•					
Lab ID	True Value	Result	Units	REC	& Limits
1200879-IBL1		1.00	pg of Hg		
1200879-IBL2		2.19	pg of Hg		
1200879-IBL3		2.70	pg of Hg		
1200879-IBL4		2.57	pg of Hg		
1200879-CAL1	10.00	11.02	pg of Hg	110%	
1200879-CAL2	25.00	25.59	pg of Hg	102%	
1200879-CAL3	100.0	96.98	pg of Hg	97%	
1200879-CAL4	500.0	490.5	pg of Hg	98%	
1200879-CAL5	2500	2419	pg of Hg	97%	
1200879-CAL6	10000	9695	pg of Hg	97%	
1200879-ICV1	1568	1503	pg of Hg	96%	85-115
1200879-CCB1		7.81	pg of Hg		
1200879-CCV1	500.0	500.3	pg of Hg	100%	77-123
1200879-CCB2		5.03	pg of Hg		
1200879-CCB3		4.09	pg of Hg		
1200879-CCB4		4.49	pg of Hg		
1200879-CCV2	500.0	518.0	pg of Hg	104%	77-123
1200879-CCB5		4.05	pg of Hg		
1200879-CCV3	500.0	507.3	pg of Hg	101%	77-123
1200879-CCB6		4.91	pg of Hg		
1200879-CCV4	500.0	518.5	pg of Hg	104%	77-123
1200879-CCB7		4.18	pg of Hg		
1200879-CCV5	500.0	532.4	pg of Hg	106%	77-123
1200879-CCB8		7.07	pg of Hg		
1200879-CCV6	500.0	543.4	pg of Hg	109%	77-123
1200879-CCB9		4.25	pg of Hg		
1200879-CCV7	500.0	537.9	pg of Hg	108%	77-123
1200879-CCBA		4.59	pg of Hg		
1200879-CCV8	500.0	540.7	pg of Hg	108%	77-123
1200879-CCBB		5.69	pg of Hg		
1200879-CCV9	500.0	537.6	pg of Hg	108%	77-123
1200879-CCBC		4.70	pg of Hg		
			- •		



Page 16 of 29 Client PM: Jay Perkins Client PO: 141391

Instrument Calibration

Sequence: 1200883 Total Mercury Speciation by CVAFS

Method: EPA 1631

Instrument: THG-05 **Date**: 11/21/2012

Analyte: Hg

Lab ID	True Value	Result	Units	REC	& Limits
1200883-IBL1		3.67	pg of Hg		
1200883-IBL2		3.15	pg of Hg		
1200883-IBL3		3.62	pg of Hg		
1200883-IBL4		3.64	pg of Hg		
1200883-CAL1	10.00	9.46	pg of Hg	95%	
1200883-CAL2	25.00	25.68	pg of Hg	103%	
1200883-CAL3	100.0	101.2	pg of Hg	101%	
1200883-CAL4	500.0	508.9	pg of Hg	102%	
1200883-CAL5	2500	2529	pg of Hg	101%	
1200883-CAL6	10000	9897	pg of Hg	99%	
1200883-ICV1	1568	1551	pg of Hg	99%	85-115
1200883-CCB1		6.51	pg of Hg		
1200883-CCV1	500.0	512.8	pg of Hg	103%	77-123
1200883-CCB2		4.41	pg of Hg		
1200883-CCB3		4.56	pg of Hg		
1200883-CCB4		4.11	pg of Hg		
1200883-CCV2	500.0	499.4	pg of Hg	100%	77-123
1200883-CCB5		5.05	pg of Hg		
1200883-CCV3	500.0	494.4	pg of Hg	99%	77-123
1200883-CCB6		4.14	pg of Hg		
1200883-CCV4	500.0	498.5	pg of Hg	100%	77-123
1200883-CCB7		3.57	pg of Hg		
1200883-CCV5	500.0	495.2	pg of Hg	99%	77-123
1200883-CCB8		3.82	pg of Hg		
1200883-CCV6	500.0	484.3	pg of Hg	97%	77-123
1200883-CCB9		3.75	pg of Hg		
1200883-CCV7	500.0	495.4	pg of Hg	99%	77-123
1200883-CCBA		3.76	pg of Hg		
1200883-CCV8	500.0	489.2	pg of Hg	98%	77-123
1200883-CCBB		3.57	pg of Hg		



Page 17 of 29 Client PM: Jay Perkins

Client PO: 141391

Sample Containers

Lab ID: 1246007-01 Report Matrix: Influent Collected: 11/09/2012 Sample: BioReactor 1 Inf Sample Type: Sample Received: 11/13/2012 Des Container Size Lot **Preservation** P-Lot Ship. Cont. Bottle FLPE Hg-T 500 mL 71666330 none n/a Cooler 10 Lab ID: 1246007-02 Collected: 11/09/2012 Report Matrix: Influent Sample: BioReactor 1 Inf Sample Type: Sample Received: 11/13/2012 Comments: Qualify H Des Container Size Lot **Preservation** P-Lot Ship. Cont. 71691270 Bottle FLPE Hg-T 250 mL none n/a Cooler 10 **Comments:** Split from THg Container **Lab ID**: 1246007-03 Report Matrix: DIW Collected: 11/09/2012 Sample: BioReactor 1 Inf Hg Blk Received: 11/13/2012 Sample Type: Field Blank Des Container **Preservation** Ship. Cont. **Size** Lot P-Lot Bottle FLPE Hg-T 500 mL 71666330 none n/a Cooler 10 Lab ID: 1246007-04 Report Matrix: DIW Collected: 11/09/2012 Sample: BioReactor 1 Inf Hg Blk Sample Type: Field Blank Received: 11/13/2012 Comments: Qualify H Des Container **Size** Lot **Preservation** P-Lot Ship. Cont. Bottle FLPE Hg-T 250 mL 71691270 none n/a Cooler 10 **Comments:** Split from THg Container Lab ID: 1246007-05 Report Matrix: Influent Collected: 11/09/2012 Sample: BioReactor 2 Inf Sample Type: Sample Received: 11/13/2012 Des Container **Preservation** P-Lot Ship. Cont. Size Lot Bottle FLPE Hg-T 500 mL 71666330 none n/a Cooler

10



Page 18 of 29

Client PM: Jay Perkins Client PO: 141391

Sample Containers

Lab ID: 1246007-06Report Matrix: InfluentCollected: 11/09/2012Sample: BioReactor 2 InfSample Type: SampleReceived: 11/13/2012

Comments: Qualify H

Des ContainerSizeLotPreservationP-LotpHShip. Cont.A Bottle FLPE Hg-T250 mL71691270nonen/aCooler

10

Lab ID: 1246007-07Report Matrix: DIWCollected: 11/09/2012Sample: BioReactor 2 Inf Hg BlkSample Type: Field BlankReceived: 11/13/2012

Des
AContainer
Bottle FLPE Hg-TSize
500 mLLot
71666330
10Preservation
noneP-Lot
n/apH
Cont.
Cooler

Lab ID: 1246007-08 Report Matrix: DIW Collected: 11/09/2012

Sample: BioReactor 2 Inf Hg Blk Sample Type: Field Blank Received: 11/13/2012

Comments: Qualify H

Comments: Split from THg Container

Des Container Size Lot Preservation P-Lot pH Ship. Cont.

Bottle FLPE Hg-T 250 mL 71691270 none n/a Cooler 10

Comments: Split from THg Container

Lab ID: 1246007-09Report Matrix: EffluentCollected: 11/09/2012Sample: BioReactor 2 EffSample Type: SampleReceived: 11/13/2012Des ContainerSizeLotPreservationP-LotpHShip. Cont.A Bottle FLPE Hg-T500 mL71666330nonen/aCooler

N Bottle FLPE Hg-T 500 mL 71666330 none n/a 10

Lab ID: 1246007-10Report Matrix: EffluentCollected: 11/09/2012Sample: BioReactor 2 EffSample Type: SampleReceived: 11/13/2012

Comments: Qualify H

DesContainerSizeLotPreservationP-LotpHShip. Cont.ABottle FLPE Hg-T250 mL71691270nonen/aCooler

10

Comments: Split from THg Container



Page 19 of 29 Client PM: Jay Perkins **Client PO: 141391**

Sample Containers

Lab ID: 1246007-11

Sample: BioReactor 2 Eff Hg Blk

Des Container

Bottle FLPE Hg-T

Report Matrix: DIW Sample Type: Field Blank

Lot 71666330 10

Lot

71691270

10

Size

500 mL

Preservation

P-Lot none n/a

Collected: 11/09/2012 Received: 11/13/2012

Ship. Cont. Cooler

Collected: 11/09/2012

Received: 11/13/2012

Lab ID: 1246007-12

Sample: BioReactor 2 Eff Hg Blk

Comments: Qualify H

Des Container Size Bottle FLPE Hg-T 250 mL

Comments: Split from THg Container

Report Matrix: DIW Sample Type: Field Blank

> **Preservation** none

P-Lot n/a

Ship. Cont. Cooler

Shipping Containers

Cooler

Received: November 13, 2012 8:45 Tracking No: 5353 0519 5733 via FedEx

Coolant Type: Ice Temperature: 0.3 °C **Description:** Cooler Damaged in transit? No Returned to client? No

Custody seals present? No Custody seals intact? No **COC present?** Yes

Page 20 of 29 CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM Analytical Laboratory Use Only **Duke Energy Analytical Laboratory** ¹⁹Page 1 of 1 Matrix: OTHER DISTRIBUTION Duke Energy₅ Originating Mail Code MGO3A2 (Building 7405) ORIGINAL to LAB. 13339 Hagers Ferry Rd COPY to CLIENT Huntersville, N. C. 28078 SAMPLE PROGRAM Ground Water (704) 875-5245 Fax: (704) 875-4349 RCRA 2)Phone No: **Belews Creek** Waste 1)Project Name Cooler Temp (C) (Flex Fuel) - WW ⁵Preserv.:1=HCL ASC. · Vendor. 4)Fax No: 2=H₂SO₄ 3=HNO_B 2) Client: Melonie Martin, Wayne Chapman, **Brooks Rand** 3 3 4 5=None Tom Johnson, Bill Kennedy V_ASC filtered Hg 1631 total and fillered V_Brand MR# Mail Code: 6)Account: 16Analyse Required 5)Project: MBCFFLX01 (IMS) 10)Activity ID: Sulfate, - Dionex Customer to complete all 8)Oper. Unit: Speciation, BC01 **NEXHSTK** appropriate non-shaded areas. 윈 TDS, TSS (ICP), Metals + LAB USE ONLY Se Speciation Bottle ξ Signature ¹³Sample Description or ID Time Date 1 1 08:00 FGD Purge Eff 08:05 EQ Tank 1 1 1* 08:10 BioReactor 1 Inf 08:10 BioReactor 1 Inf Hg Blk 1 1* 1 1 08:15 BioReactor 2 Inf 08:15 BioReactor 2 Inf Hg Blk 1 1* 1 18:20 BioReactor 2 Eff 08.20 BioReactor 2 Eff Hg Blk 08,30 Filter Blank Filter Mn and Se in the field Lab, return kit to Wayne Chapman Cpb-[] Customer to sign & date below - fill out from left to right. ²²Requested Turnaround , IMPORTANT! desired turnaround. I) Religiquished By radis 21 Days X____ 3) Reinquished By *7 Days 6)Accepted Date/Time 5)Relinquished By Date/Fime · 48 Hr ____ 8)Accepted By: Please indicate Date/Time 10) Seal/Lock Opened By)Seal/Locked By 11-25-12 Date/Time 12)Seal/Lock Opened By 11)Seal/Locked B

* Metals=TRM/IMS = As, Cd, Cr, Cu, Ni, Se, Ag, Zn TRM/ICP = B, Ca, Fe, Mg, Mn

Comments



18804 Northcreek Parkway Bothell, WA, 98011 Tel: (425) 483-3300 Fax: (425) 483-9818 www.appliedspeciation.com

November 20, 2012

Jay Perkins Duke Energy Analytical Laboratory Mail Code MGO3A2 (Building 7405) 13339 Hagers Ferry Rd. Huntersville, NC 28078 (704) 875-5245

Project: Belews Creek (Flex Fuel) - WW (LIMS #J12110206)

Dear Mr. Perkins,

Attached is the report associated with four (4) aqueous samples submitted for selenium speciation on November 12, 2012. The samples were received in a sealed cooler at -0.5°C on November 13, 2012. Selenium speciation analysis was performed via ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS). Any issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Russell Gerads Vice President

Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report prepared for:

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078

Project: Belews Creek (Flex Fuel) - WW (LIMS #J12110206)

November 20, 2012

1. Sample Reception

Four (4) aqueous samples in 125mL HDPE bottles (provided by Applied Speciation and Consulting) were submitted for selenium speciation analysis on November 12, 2012. The samples were received on November 13, 2012 in a sealed container at -0.5°C.

The samples were received in a laminar flow clean hood, void of trace metals contamination and ultra-violet radiation, and were designated discrete sample identifiers. An aliquot of each sample was filtered (0.45µm) and each filtrate was stored in a secure, monitored cryofreezer (maintained at a temperature of -80°C) until selenium speciation analysis could be performed via ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS).

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

<u>Selenium Speciation Analysis by IC-ICP-DRC-MS</u> Prior to analysis, an aliquot of each sample was filtered with a syringe filter (0.45μm) and injected directly into an autosampler vial. No further sample preparation was performed as any chemical alteration of a sample may shift the equilibrium of the system, resulting in changes in speciation ratios.

3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of

each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimum interval of every ten analytical runs.

Selenium Speciation Analysis by IC-ICP-DRC-MS Each sample for selenium speciation analysis was analyzed by ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS) on November 13 and 14, 2012. An aliquot of each sample is injected onto an anion exchange column and mobilized by a basic (pH > 7) gradient. The eluting selenium species are then introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a reaction gas which preferentially reacts with interfering ions of the same target mass to charge ratios (m/z). A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

Retention times for each eluting species are compared to known standards for species identification.

4. Analytical Issues

The overall analyses went well and no significant analytical issues were encountered. All quality control parameters associated with the samples were within acceptance limits.

The final continuing calibration blank (CCB) sample bracketing this sample set failed to inject. Sample BioReactor 2 Eff was the last sample in the set to be analyzed. Analysis of sample BioReactor 2 Eff yielded non-detect values for all selenium species, effectively demonstrating that no contamination was present in the analytical platform at the time the sample set was evaluated. All other CCB values were within control limits. No corrective action was necessary.

The estimated method detection limits (eMDLs) for selenite, selenate, and selenocyanate are generated from replicate analyses of the lowest standard in the calibration curve. Not all selenium species are present in preparation blanks; therefore, eMDL calculations based on preparation blanks are artificially biased low.

The eMDL for methylseleninic acid and selenomethionine is calculated from the average eMDL of selenite, selenate, and selenocyanate. The calibration does not contain methylseleninic acid or selenomethionine due to impurities in these standards which would bias the results for other selenium species.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

Russell Gerads

Vice President

Applied Speciation and Consulting, LLC

Selenium Speciation Results for Duke Energy Project Name: Belews Creek (Flex Fuel) - WW Contact: Jay Perkins LIMS #J12110206

Date: November 20, 2012 Report Generated by: Russell Gerads Applied Speciation and Consulting, LLC

Sample Results

						Unknown Se
Sample ID	Se(IV)	Se(VI)	SeCN	MeSe(IV)	SeMe	Species (n)
FGD Purge Eff	204	86.9	41.6	ND (<2.5)	ND (<2.5)	9.6 (2)
BioReactor 1 Inf	28.6	59.1	ND (<0.80)	3.63	ND (<0.63)	0.92 (1)
BioReactor 2 Inf	5.70	4.44	ND (<0.80)	ND (<0.63)	ND (<0.63)	0.0 (0)
BioReactor 2 Eff	ND (<0.73)	ND (<0.34)	ND (<0.80)	ND (<0.63)	ND (<0.63)	0.0 (0)

All results reflect the applied dilution and are reported in µg/L

ND = Not detected at the applied dilution

SeCN = Selenocyanate

MeSe(IV) = Methylseleninic acid

SeMe = Selenomethionine

Unknown Se Species = Total concentration of all unknown Se species observed by IC-ICP-MS

Selenium Speciation Results for Duke Energy Project Name: Belews Creek (Flex Fuel) - WW Contact: Jay Perkins LIMS #J12110206

Date: November 20, 2012 Report Generated by: Russell Gerads Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte (µg/L)	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL*	eMDL 50x	eMDL 200x
Se(IV)	0.00	0.00	0.00	0.00	0.00	0.00	0.015	0.73	2.9
Se(VI)	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.34	1.4
SeCN	0.00	0.00	0.00	0.00	0.00	0.00	0.016	0.80	3.2
MeSe(IV)	0.00	0.00	0.00	0.00	0.00	0.00	0.013	0.63	2.5
SeMe	0.00	0.00	0.00	0.00	0.00	0.00	0.013	0.63	2.5

eMDL = Estimated Method Detection Limit

Quality Control Summary - Certified Reference Materials

Analyte (μg/L)	CRM	True Value	Result	Recovery
Se(IV)	LCS	9.57	9.61	100.4
Se(VI)	LCS	9.48	9.27	97.7
SeCN	LCS	8.92	9.04	101.4
MeSe(IV)	LCS	6.47	6.66	103.0
SeMe	LCS	9.32	8.85	94.9

^{*}Please see narrative regarding eMDL calculations

Selenium Speciation Results for Duke Energy Project Name: Belews Creek (Flex Fuel) - WW Contact: Jay Perkins LIMS #J12110206

Date: November 20, 2012 Report Generated by: Russell Gerads Applied Speciation and Consulting, LLC

Quality Control Summary - Matrix Duplicates

Analyte (µg/L)	Sample ID	Rep 1	Rep 2	Mean	RPD
Se(IV)	Batch QC	648.9	636.2	642.5	2.0
Se(VI)	Batch QC	102.5	103.1	102.8	0.6
SeCN	Batch QC	53.3	53.0	53.1	0.6
MeSe(IV)	Batch QC	ND (<2.5)	ND (<2.5)	NC	NC
SeMe	Batch QC	ND (<2.5)	ND (<2.5)	NC	NC

ND = Not detected at the applied dilution

NC = Value was not calculated due to one or more concentrations below the eMDL

Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate

Analyte (µg/L)	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
Se(IV)	Batch QC	1112	1876	110.9	1112	1824	106.3	2.8
Se(VI)	Batch QC	1009	1114	100.2	1009	1105	99.3	8.0
SeCN	Batch QC	915.0	887.8	91.2	915.0	904.2	93.0	1.8

1		Analytical Laboratory Use Only	Ā	Analytical Laboratory Use Unly	Use Unily	T	19Page 1 of 1
Duke	Ke	Mail Code MGO3A2 (Building 7405)	SOFOLICITY #SWIT	Matrix OTHER	Samples NC Originating SC From		DISTRIBUTION ORIGINAL to LAB
Bis.	Energy	Huntersville, N. C. 28078 (704) 875-5245 Fax: (704) 875-4349	Logged By Date & Time	8001 -1-2	SAMPLE PROGRAM Drinking Water	Ground Water NPDES UST RCRA	COPY to CLIENT
1)Project Name	Belew (Flex Fu	Belews Creek 2)Phone No: (Flex Fuel) - WW		Cooler Temp (C)	Waste		
2) Client:	Melonie Martin, Tom Johnso	Melonie Martin, Wayne Chapman, Tom Johnson, Bill Kennedy	Vendor: ASC, Brooks Rand	A.	m)		4
5)Project:	MBCFFLX01		MR#	sesyli ired	1*) fillere		
8)Oper. Unit:	BC01	9)Process: 10)Activity ID: NEXHSTK	Customer to complete all appropriate non-shaded areas.	snA ⁸¹ upeЯ	and fillered BAS gH		Sulfate, - Dionex
LAB USE ONLY	Se Speciation Bottle			Comp.	TDS, TS3 Hg 1631 total Mn (ICP) Se, Spec		Chloride, Bromide,
"Lab 10	2	Sample Description or ID	Date IIII 6 68:00 //		1 1 1 1		-
0		EQ Tank	\$0.80		-		
7		BioReactor 1 Inf	08:00		**		
Ď.		BioReactor 1 Inf Hg Blk	0/:80				
, O		BioReactor 2 Inf	51:80				
20		BioReactor 2 Inf Hg Blk	C1.40		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1
7		BioReactor 2 Eff	08:30				
77		BioReactor 2 Eff Hg Blk	07.00				
23		Filter Blank	08,30		7-		
		us motted			it.	Filter Mn and Se in the field	e in the field
					9	A Wayno	Change Change
1					Lab, return N	t to waying	1
1) Relipquished By	Customer to sign & d	Customer to sign & date below . fill out from left to right. Date/Time 19/12 69:15 Date/Time	2) Accepted By 4) Accepted By	// - / - / Setertime		punojet	²² Requested Turnaround
SiRelinquished By		Date/Time	Spacepool By: Cultime		Date/Time	sired turi	*7 Days
7)Refinquished By)	//- D-OatedTime	(c) naviagavio	C		eb et	
9)Seal/Locked By	4	Josephine J	10) Seal/Lock Opened By	Dare/rime		soibr	Vendor Lab 13 Days
7	1	Date/Time	12)Seal/Lock Opened By	Date/Time		1/	- イン

		Duke Energy Analytical Laboratory				Analytical Laboratory Use Only									19	Page 1	of 1			
Du En	ke ergy₅	Mail Code MGO3 13339 Hag Huntersville (704)	A2 (Building 7405) Jers Ferry Rd J., N. C. 28078 875-5245 4) 875-4349	Cogged By Date & Time 1008						Originating SC From SAMPLE PROGRAM Ground Water NPDES Drinking WaterUST					DISTRIBUTION 29 OF ORIGINAL to LAB, COPY to CLIENT					
Project Name		ws Creek	2)Phone No:	Vendor							Drinking Water RCRA									
Client:	Melonie Martin	Fuel) - WW n, Wayne Chapman, on, Bill Kennedy	4)Fax No:								-	-		4						
Project:		6)Account:	Mail Code:									Iltere	ASC							
Oper. Unit:		9)Process: NEXHSTK	10)Activity ID:	Customer to complete all appropriate non-shaded areas.						Metals + Hr 245 1*	Se	iati		Sulfate, - Dionex						
AB USE ONLY	Se Speciation Bo		Description or ID	Date	Time Signati		ire	"Comp.	"Grab		Metals +	Mn (ICP),			Chloride, Bromide,					
"Lab ID 315			D Purge Eff	11/9	08:00	Travi-1	20		1		1	1	1		1					
110	A SECOND		EQ Tank	1	08:05				1			1 1	1							
17		BioReactor 1 Inf BioReactor 1 Inf Hg Blk BioReactor 2 Inf BioReactor 2 Inf Hg Blk			08:10				+	+++	1 1	* 1	1							
18					08:10						1	1* 1	1 1	10.000						
19	22 Su				08:15			-				* 1	1							
20				10 10 10 10	08:15			-	+		1		1		1					
21	age c		Reactor 2 Eff		08:20				+		1	* 1	1		-					
22	ndou.	BioRea	actor 2 Eff Hg Blk		08:20				+		1	+	+					4		
	dde			+	A # 23	1			+			+	+							
23	iplete.		Filter Blank		08,30		1		1											
	er to con	ice	metted										Filte	iter Mn and S	se in th	he field	d			
	Custom									Lal	o, re	tur	n kit	t to Wayne	Chap	man_(cpt.	2-11		
1) Relinquished By Date/Time 1/9/12 69:15 Date/Time Date/Ti				2) Accepted By //-/2 - Date/Time 4) Accepted By Date/Time								E	22 Requested Turnaround 21 Days X *7 Days48 Hr							
				6)Accepted By: Date/Time									Customer, important and indicate desired furnary and indicate desired furnary 48 Hr							
				8)Accepted By: Date/Fime																
9)Seal/Locked By	b		te/Time	10) Seal/Lock Opened By 12) Seal/Lock Opened By Date/Time 12) Seal/Lock Opened By Date/Time								*Vend	*Vendor Lab 13 DaysXX							